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23432 7590 12/11/2009

COOPER & DUNHAM, LLP
30 Rockefeller Plaza
20th Floor
NEW YORK, NY 10112

EXAMINER

KAU, STEVEN Y

ART UNIT

PAPER NUMBER

2625

DATE MAILED: 12/11/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,797	07/19/2006	Daisuke Suzuki	227176611	8762

TITLE OF INVENTION: IMAGE PROCESSING METHOD, PRINTER DRIVER, IMAGE PROCESSING APPARATUS, IMAGE FORMING APPARATUS AND IMAGE FORMING SYSTEM

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	03/11/2010

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE** OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

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Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

23432 7590 12/11/2009
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NEW YORK, NY 10112

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/586,797 07/19/2006 Daisuke Suzuki 2271/76611 8762

TITLE OF INVENTION: IMAGE PROCESSING METHOD, PRINTER DRIVER, IMAGE PROCESSING APPARATUS, IMAGE FORMING APPARATUS AND IMAGE FORMING SYSTEM

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	03/11/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
KAU, STEVEN Y	2625	358-003140

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

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This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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EXAMINER

KAU, STEVEN Y.

ART UNIT

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Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 355 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 355 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability**Application No.**

10/586,797

Applicant(s)

SUZUKI ET AL.

Examiner

STEVEN KAU

Art Unit

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10/16/2009.
2. ☒ The allowed claim(s) is/are 1,4-8 and 11-15.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/Steven Kau/
Examiner, Art Unit 2625

/King Y. Poon/
Supervisory Patent Examiner, Art Unit 2625

DETAILED ACTION

Allowable Subject Matter

1. The following is an examiner's statement of reason for allowance.

The primary reasons for allowance for claims 1, 4-8, and 11-15 are the inclusion of the limitations of the image processing method, the image processing apparatus and the image processing system for making a two-way recording to form an image on a recording medium by recording in a forward path and a return path of a scan by an ink-jet recording head. Claims 1, 8 and 13 are independent claims. Claims 4-7, and 14-15 are dependent claims to claim 1, and 11-12 are the dependent claims to claim 8.

Claim 1 is directed to an image processing method, claim 8 is directed to an image processing apparatus, and claim 13 is directed to an image forming system. Claim limitations of claim 1 and claim 8 are substantially corresponding to claim 13.

With respect to claim 13, limitations recite, "an image processing apparatus recited in claim 7; and an image forming apparatus configured to make a two-way recording to form an image on a recording medium by recording in a forward path and a return path of a scan by an ink-jet recording head, the image forming apparatus comprising a halftone process part configured to carry out a halftone process that is based on an inclined line-group keytone and maintains keytone continuity, wherein the halftone process part includes a dither process part configured to carry out a dither process in which the inclined line-group keytone appears at a stage where the recording in the forward path is made, wherein the dither process uses a dither mask that is

formed by first patterns and second patterns, the first patterns have a plurality of different threshold values by combinations of dots recognizable as inclined line-group tone patterns, and the second patterns interpolate between the first patterns to obtain linear gradation values, and wherein first threshold values of the dither mask at dot positions recorded during the recording in the forward path are small relative to second threshold values at dot positions recorded during the recording in the return path in a section between the first and second threshold values, the first threshold values emphasize the inclined line-group keytone pattern by a combination of specific dots, and the second threshold values are higher than the first threshold values and emphasize the inclined line-group keytone pattern by a combination of specific dots."

Prior art Hirano '198 teaches an image forming system with claim elements of :
"to carry out a halftone process with respect to the data to be output to the image forming apparatus; and an image forming apparatus configured to make a two- way recording to form an image on a recording medium by recording in a forward path and a return path of a scan by an ink-jet recording head, the image forming apparatus comprising a halftone process part configured to carry out a halftone process that is based on an inclined line-group keytone and maintains keytone continuity, wherein the halftone process part includes a dither process part configured to carry out a dither process in which the inclined line-group keytone appears at a stage where the recording in the forward path is made".

Hirano '198 does not disclose "wherein the dither process uses a dither mask that is formed by first patterns and second patterns, the first patterns have a plurality of

different threshold values by combinations of dots recognizable as inclined line-group tone patterns, and the second patterns interpolate between the first patterns to obtain linear gradation values, and wherein first threshold values of the dither mask at dot positions recorded during the recording in the forward path are small relative to second threshold values at dot positions recorded during the recording in the return path in a section between the first and second threshold values, the first threshold values emphasize the inclined line-group keytone pattern by a combination of specific dots, and the second threshold values are higher than the first threshold values and emphasize the inclined line-group keytone pattern by a combination of specific dots."

Prior arts, Iwasaki '386 teaches "threshold values at dot positions recorded during the recording in the forward path are small relative to threshold values at dot positions recorded during the recording in the return path in a section between first and second threshold values".

However, Hirano '198 alone or combining with the prior arts, i.e. Iwasaki '386, do not teach the claim limitations of Claim 13, "wherein the dither process uses a dither mask that is formed by first patterns and second patterns, the first patterns have a plurality of different threshold values by combinations of dots recognizable as inclined line-group tone patterns, and the second patterns interpolate between the first patterns to obtain linear gradation values, and wherein first threshold values of the dither mask at dot positions recorded during the recording in the forward path are small relative to second threshold values at dot positions recorded during the recording in the return

path in a section between the first and second threshold values, the first threshold values emphasize the inclined line-group keytone pattern by a combination of specific dots, and the second threshold values are higher than the first threshold values and emphasize the inclined line-group keytone pattern by a combination of specific dots."

In addition, applicant's arguments, pages 11-14, Remarks, 10/16/2009, that the cited prior arts do not teach the claim limitations recited above are persuasive (except for the typo-errors, i.e. "with claims 1 and 8 being in independent form", page 10, and it should be written, "with claims 1, 8 and 13 being in independent form"; and "independent claims 1 and 35-38", page 14, and it should be written, "independent claims 1, 8 and 13"), and the examiner does not find any prior arts teach or suggest the above claim limitations. Thus, the invention appears as a unique and non-obviousness invention.

Because of these reasons, the independent claims 1, 8 and 13 are allowable. Claims 3-7 and 14-15 are allowable because of their dependence to claim 1; and claims 11-12 are also allowable because of their dependence to claim 8.

Reference Prior Arts

2. The closest prior arts in the record are Hirano (US 7,499,198), and Iwasaki et al (US 7,011,386).

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Kau whose telephone number is 571-270-1120 and fax number is 571-270-2120. The examiner can normally be reached on M-F, 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Poon can be reached on 571-272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Steven Kau/
Examiner, Art Unit 2625
December 2, 2009

/King Y. Poon/
Supervisory Patent Examiner, Art Unit 2625

Application/Control Number: 10/586,797
Art Unit: 2625

Page 7